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ABSTRACT

An inservice program to teach instructional strategies that promote metacognitive development to classroom teachers in their roles as instructional designers, based on the notion that instruction in metacognitive strategies must be incorporated into content instruction, is described. Teachers were informed about the following specific metacognitive strategies: (1) chunking; (2) framing; (3) concept mapping; (4) use of metaphor; (5) use of advance organizers; (6) rehearsing; (7) use of imagery; and (8) use of mnemonics. The inservice program is directed at the secondary level for any content area, but may easily be adapted for any level, kindergarten through adult. The inservice program begins with an examination of the importance of metacognition and moves into discussions of the specific strategies. An initial test of the inservice design, not yet evaluated formally, indicates its utility and the positive reaction of teachers. (Contains 8 references.) (SLD)

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Instructional Strategies for Metacognitive Development: An Inservice Design

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Instructional Strategies for Metacognitive Development: An Inservice Design

Introduction

The impact of the "cognitive revolution" on instructional design (ID) has been substantial. From the development of ID models to their application, instructional technology theorists continue to bring cognitive psychology and human information processing theory to bear. The concepts and empirical findings of cognitive science are "helping to guide ID toward new understandings of how people learn and how to design instruction for optimal results" (Ely, 1992, p.44). There is widespread agreement that each learner needs to learn **how** to learn if they are to compete in the technological world that awaits. So, in addition to the dozens of other instructional priorities of today's classroom teacher, this author suggests that we must also instruct learners in metacognitive strategies: those strategies which allow the learner to maintain awareness and control of their learning, to choose particular strategies for use, and to self-monitor the use of a variety of strategies.

West, Farmer and Wolff (1991) make a strong case for embedding the instruction of these strategies within the content. Research supports the effectiveness of metacognitive training within varied content domains (Pressley, Snyder & Cariglia-Bull, 1987; Hansen & Pearson, 1983; Brown, Campione & Day, 1981). While these control strategies are internal, learning how, when, where and why to use them will be aided by incorporating their instruction with content instruction (West, *et al*, 1991, p.19).

Classroom teachers are typically not trained in the practical applications of cognitive science or human information processing theory. Most practicing teachers have had little exposure to instructional design principles or the cognitive theories which support effective instruction. Nonetheless, all teachers design instruction (Briggs, 1977, p.179) at various levels with various expectations for the learner. The inservice described here is designed to teach instructional strategies that promote metacognitive development to these "front-line" instructional designers. Fundamental to this inservice design is the notion that instruction in metacognitive strategies must be incorporated into their content instruction.

Description of the Inservice

Teachers have a strong sense of **what** they want their students to learn, but they have a weaker sense of **how** they can most effectively help students learn, retain, and transfer their knowledge. This inservice design is predicated on helping teachers learn about eight specific metacognitive strategies and how to embed strategy instruction within the instruction of content objectives. Strategies addressed are: chunking, framing, and concept mapping (organizing strategies), use of metaphor and use of advance organizers (bridging strategies), rehearsing, use of imagery, and use of mnemonics (multipurpose strategies). This inservice is not intended to be a comprehensive treatment of these strategies, nor an all-encompassing exposure to metacognition, but an introduction to effective metacognitive strategy instruction.

Application is directed at the secondary level (any content area) but may easily be adapted/extended for instructors at any level, K-adult. Participants are expected to be novice to expert certified secondary instructors and/or administrative personnel. The inservice design and companion reference manual/workbook incorporate the control strategies previously listed. Gagne's nine events of instruction serve as the defining methodological structure for the inservice because most classroom teachers can relate to and recognize these events as an instructional model they have implemented themselves. The reference manual/workbook is intended to serve as a personalized teacher reference at the conclusion of the inservice; it is not intended to be a stand-alone, self-instruction module. A delivery format of two distinct one day sessions is suggested, but might be re configured to about twelve one hour sessions.

Design of the Inservice

Participants begin their journey into metacognitive strategies by addressing four questions: What are metacognitive strategies? Why should I teach metacognitive strategies?

When do I teach metacognitive strategies? and How do I teach metacognitive strategies? Discussion of each of these questions includes a brief look at related research and the supporting cognitive theory. Requiring the learner to be an active participant in their learning environment, motivation, and meaningful learning are examples of the concepts reviewed. This author presents an eight step iterative instructional model specifically created to provide teachers with a structure for embedding metacognitive strategy instruction within content instruction.

Once this conceptual foundation is in place, the inservice focus shifts to the eight specific strategies mentioned previously. Content instruction for each strategy includes: a definition of the strategy, a discussion of the value of the strategy, examples of practical, everyday applications of the strategy, an activity related to the classroom application of the strategy, and modeling of the application of the strategy within the eight-step instructional model. When appropriate, other theoretical constructs are introduced (e.g. types of knowledge, storage and retrieval) and strategies are considered in combination(s) for optimal effectiveness.

The conclusion of the inservice is a discussion of factors which seem to influence the degree of effectiveness of any particular metacognitive strategy. According to Snowman (1986), these factors are (1) the amount and type of previous training in the use of the strategy, (2) the extent to which the learner understands the teacher objectives, and (3) the ability of the learner to recognize appropriate conditions for use. Helping students learn to control their own cognitive processes can have differential effects on their future study behaviors and academic success. This inservice strongly emphasizes that teachers must help students distinguish between working harder and working longer; between working harder and working smarter (Weinstein, Hagan & Meyer, 1991).

Results of Implementation

This author is currently delivering this inservice to a group of approximately fifty secondary instructors from a single high school in northern Colorado. Participants have the option of attending for university or recertification credit or simply for the professional growth opportunity. Three participants are building administrators who have a sincere interest in increasing the quality of the instruction in their school.

While no hard data has yet been collected, the "reviews" are very positive. Attendance at each successive session has increased. Participating teachers find this inservice professionally significant **and** practical; they are encouraging their peers to attend. Teachers are "won over" when they find that instruction in metacognitive strategies needs to occur embedded within their content instruction, not in addition to their content instruction. They are enthusiastic about the concept of metacognition instruction and the potential for creating an instructional environment where accountability for education is shared; the learner is responsible for controlling their own learning and the teacher is responsible for guiding, supporting, and facilitating that process. Most participants have tried to introduce at least one of the strategies using the eight step instructional model. Within the large group, they share their successes and seek suggestions for revising their instruction. The final test is, of course, whether or not the majority embrace instruction in metacognitive strategies for the long term and adapt their daily instruction to integrate a variety of the strategies presented in this inservice on a regular basis.

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